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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/016,864	12/14/2001	Klaus Ludewigt	MOH-P990638	5943
24131	7590	06/29/2004	EXAMINER	
LERNER AND GREENBERG, PA P O BOX 2480 HOLLYWOOD, FL 33022-2480			RODRIGUEZ, ARMANDO	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/016,864

Applicant(s)

LUDEWIGT ET AL.

Examiner

ARMANDO RODRIGUEZ

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 5-13 is/are rejected.
- 7) ☒ Claim(s) 2 and 4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Claims 1-13 are pending.

Applicant's arguments filed on March 30, 2004 have been fully considered but they are not persuasive.

Applicant's arguments on pages 3 and 4, which pertains to the cited Pepper reference for the use of an inhomogeneous optical pumping beam for minimizing the potential for parasitic oscillation modes and amplified spontaneous emission (ASE). In column 6 lines 25-34 Pepper describes to incorporate optical phase mask elements (40) and (41), which will minimize the potential for parasitic oscillation modes and amplified spontaneous emission (ASE); it further discloses the use of an image relay system (42) when there is more than one amplifier stage. Column 9 lines 22-27, discloses the use of an image relay system (42), when there are multiple gain elements. Column 9 line 63 to column 10 line 5, discloses the use of an image relay system (42), when a cascaded chain of amplifier gain medium are configured into an oscillator. The Pepper reference was cited for its teaching and suggestion of using an image relay system when there is more than one amplifying stage, as in the cited Chiyoe reference. In accordance with MPEP 2145 a test of obviousness is what the combined teachings of the cited prior art would have suggested to one of ordinary skill in the art. In the present case having the Chiyoe and the Pepper references where both systems have multiple amplifying stages and Pepper's teaching of using an image relay system between the gain elements

would have been obvious to one of ordinary skill in the art because the image relay system will provide efficient intracavity coupling.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3,5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanaka Chiyoe (JP 09312430) in view of Pepper (PN 5,926,494) and Graham (PN 3,727,219).

Regarding claims 1,3,7,

In figure 2 Chiyoe illustrates a solid-state laser resonator having mirrors (3) and (4) establishing the resonant cavity, a plurality of gain medium (1) within the resonant cavity optically coupled one after another, an external exciting laser beam (5), which is shown parallel to the same optical path as the amplified resonating laser beam (6).

Chiyoe does not illustrate an imaging element within the resonant cavity.

In figures 4 and 5 Pepper illustrates a laser system having a resonator, a plurality of gain medium (24,26) within the resonator in the shape of a disc, an annular imaging relay lens (42) within the resonator for spatial mapping of effective gain pattern onto the subsequent gain medium, as described in columns 9 and 10.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the Chiyoe laser resonator with the imaging relay

lens of Pepper because it would image the amplified signal beam onto a subsequent gain medium within the resonator.

Regarding the functional limitation of claim 1, where the imaging element provides focusing, relay lens are well known in the art to focus images as documented by Graham in 1973 and described in column 5 lines 10-15.

Regarding claim 5,

Chiyoee does illustrate in figure 2 the gain mediums (1) having flat surfaces and a reflective surface (2) on one of the flat surfaces for reflecting the incident beams.

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention because it discloses a resonant arrangement for reflecting the laser beams.

Regarding claim 6,

Chiyoee does illustrate in figure 2, a zigzag beam path (folded).

Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention because it discloses a resonant arrangement, which provides a folded beam path.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiyoee (JP 09312430) in view of Pepper (PN 5,926,494) and Brauch et al (PN 5,553,088).

Chiyoee and Pepper do not disclose the composition or dimensions of the gain medium with respect to the thickness and the absorption of the beam.

In table 1 of Brauch et al discloses the composition and thickness of the gain medium with respect to the absorption length of the beam.

The "person having ordinary skill" in this art has the capability of understanding the scientific and engineering principles applicable to the claimed invention. Therefore, having the disclosure of table1 would enable a person of ordinary skill in the art to optimize and obtain a working range of the gain mediums.

Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chiyoe (JP 09312430) in view of Pepper (PN 5,926,494) and Itai (PN 5,148,441).

Regarding claims 10,12,13.

Output couplers, which are partially transmissive mirrors, output the laser beam and reflect the pump beam are well known and commonly used in the laser art, as shown in Figure 1 of Itai.

Regarding claim 11.

The use of beam splitters for coupling the pump beam into a laser system is notoriously well known in the laser art.

Allowable Subject Matter

Claims 2,4 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

None of the cited prior arts alone or in combination discloses the claimed lens as having central opening, which does not image or focus the amplified laser beam but focuses the pumping light beam.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARMANDO RODRIGUEZ whose telephone number is 571-272-1952. The examiner can normally be reached on 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DON WONG can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2828

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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Examiner
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AR/DW